

## CLAIMS

What is claimed is:

1. A wireless communication system for transmitting and receiving wireless communications using at least one beam comprising:
  - a plurality of WTRUs;
  - at least one beam forming antenna wherein at least one beam emanating from the beam forming antenna may be adjusted in at least a vertical dimension; and
  - a radio network controller for controlling the adjustment of the beam to optimize transmission between the antenna and at least one WTRU.
2. The wireless communication system of claim 1 wherein the beam is further adjusted in a horizontal dimension.
3. The wireless communication system of claim 1 wherein a Node B is provided for generating control signals for adjusting the beam in accordance with tilt information provided by the radio network controller.
4. The wireless communication system of claim 1 wherein tilt information is sent from the radio network controller to the antenna wherein control signals are generated for adjusting the beam in accordance with tilt information provided by the radio network controller.
5. The wireless communication system of claim 1 wherein the beam is tilted downward to reduce interference to and from another antenna.
6. The wireless communication system of claim 1 wherein the beam is adjusted to account for variations in elevation between the WTRUs.

7. The wireless communication system of claim 1 wherein the beam is adjusted to break up null areas wherein transmission signals are not decodable.

8. The wireless communication system of claim 7 wherein the beam is adjusted by dithering the beam in at least a vertical dimension.

9. The wireless communication system of claim 7 wherein the beam is adjusted by dithering the beam in a vertical and horizontal dimension.

10. The wireless communication system of claim 1 wherein the beam is adjusted to provide multiple signals along multiple paths to increase the data rate at which a receiving WTRU may receive data contained within the signals.

11. A method for dynamically adjusting beams to optimize transmissions within a wireless communication system comprising:  
    computing tilt information in real-time based on actual conditions in a wireless communication system; and  
    adjusting at least one beam in at least a vertical dimension based on the computed tilt information.

12. The method of claim 11 further comprising the step of computing tilt information to adjust the beam to minimize interference to and from another antenna.

13. The method of claim 11 further comprising the step of computing tilt information to adjust the beam to account for variations in elevation between WTRUs.

14. The method of claim 11 further comprising the step of computing tilt information so that the beam is dithered to break up null areas wherein transmission signals are not decodable.

15. A wireless communication system for transmitting and receiving wireless communications using at least one beam comprising:

a plurality of WTRUs;

a radio network controller;

at least one beam forming antenna wherein a beam emanating from the beam forming antenna may be adjusted in at least a vertical dimension; and

a Node B for controlling the adjustment of the beam to optimize transmission between the antenna and at least one WTRU.

16. The wireless communication system of claim 15 wherein information from the radio network controller and the plurality of WTRUs is used to compute tilt information for adjusting the beam.